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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/762,980      | 01/22/2004  | Peter Vitruk         |                     | 5989             |

7590 11/25/2005

PETER VITRUK  
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Bothell, WA 98011

| EXAMINER |
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VAN ROY, TOD THOMAS

| ART UNIT | PAPER NUMBER |
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2828

DATE MAILED: 11/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |  |                               |  |
|------------------------------|--|-------------------------------|--|
| <b>Office Action Summary</b> | Application No.<br>10/762,980                | Applicant(s)<br>VITRUK ET AL. |  |
|                              | Examiner <i>T. Van Roy</i><br>Tod T. Van Roy | Art Unit<br>2828              |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. ____.  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date ____.   | 6) <input type="checkbox"/> Other: ____.                                    |

## **DETAILED ACTION**

### ***Specification***

The abstract of the disclosure is objected to because it exceeds the maximum word limit of 150 words. Correction is required. See MPEP § 608.01(b).

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The disclosure is objected to because of the following informalities:

The examiner requests that the acronyms "EMI" and "RFI" be defined in the specification upon their first use.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-2, 4-6, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sukhman et al. (US 5894493).

With respect to claim 1, Sukhman discloses an RF excited gas laser comprising: an elongated electronics compartment having elongated external fins (fig.8 #170); and an RF power supply placed inside electronics compartment (taught to be connected off of the RF electrodes, col.-8 lines 66-6, col.11 lines 33-38); and a pair of endplates attached to the opposite ends of the electronics compartment (fig.8 #'s 181, 182); and a sealed laser tube comprising of a metal tube having an external surface (fig.7 #110), a pair of end caps at the opposite ends of the metal tube forming a vacuum envelope for containing a laser gas (fig.5 #150, 120) and at least one pair of elongated electrodes inside of the metal tube configured for coupling to said RF power supply through RF coupling means (col.8 lines 55-64); and a pair of laser resonator mirrors placed on the end caps at the opposite ends of the tube forming a laser resonator aligned with the RF gas plasma discharge produced between said electrodes (fig.5 #120, 150); and a sheet-metal cover enclosing the laser tube and the electronics compartment forming a laser

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assembly (fig.8 #191, 190, 178, fig.7 #164, col.13 lines 1-3) having at least one pair of intake openings (fig.8 pair of openings for fans) and at least one pair of exhaust openings for the cooling air to flow through the laser assembly (fig.8 four slits on each plate #181, 182, col.11 lines 58-65); and at least one pair of fans placed at the intake openings of the laser assembly (fig.8 front/back); wherein said laser tube is placed inside the laser assembly (fig.8) and is attached to the endplates (fig.8) allowing for cooling air to enter the laser assembly through the intake openings and to flow through the laser assembly over the external surface of the tube and over the external fins of the electronic compartment and then exit the laser assembly through the exhaust openings. Sukhman does not teach the end plates to be flexibly attached to the laser tube. Sukhman does teach flexibly attaching other components, including the top and bottom plates (col.11 lines 5-25). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the endplate to laser tube attachment of Sukhman with the flexibly attached components of Sukhman in order to reduce torsional distortion of the laser tube (col.11 lines 5-25).

With respect to claim 2, Sukhman discloses said RF coupling means comprise vacuum sealed RF electrical leads feedthrough connected to at least one electrode and coupled to said RF power supply (col.7-8 lines 66-6).

With respect to claim 4, Sukhman discloses the external surface of the laser tube comprises elongated fins to facilitate heat transfer from the electrodes to the tube (fig.8 #160).

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With respect to claim 5, Sukhman discloses the electrodes inside of the laser tube are closely spaced to the walls of the tube to facilitate heat transfer from electrodes to the tube (col.8 lines 27-36).

With respect to claim 6, Sukhman discloses the electrodes inside of the laser tube are centered against the opposite corners of the tube (fig.15, electrodes centered vs. opposite corners of each side of the tube, i.e., the left electrode is centered vs. the upper left and lower left opposite corners, and the right electrode is centered vs. the upper right and lower right opposite corners).

With respect to claim 8, Sukhman discloses the laser gas to include CO<sub>2</sub>, N<sub>2</sub> and He (col.12 line 65).

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sukhman in view of Hongo et al. (US 4875218).

With respect to claim 3, Sukhman teaches the RF gas laser as outlined in the rejection to claim 1, but does not disclose the use of a laser tube with a square cross section. Hongo teaches a RF gas laser (abs.) which uses a laser tube with square cross section (col.3 lines 5-6). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the gas laser of Sukhman with the square cross section of Hongo in order to obtain the desired modal profile (Hongo, col.3 lines 5-7).

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sukhman in view of Hoag (US 4534032).

With respect to claim 7, Sukhman teaches the RF gas laser as outlined in the rejection to claim 1, but does not disclose multiple pairs of electrodes to be placed inside of the laser tube. Hoag teaches a gas laser which uses multiple pairs of electrodes inside of the laser tube (fig.3). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the gas laser of Sukhman with the multiple electrodes of Hoag in order to couple the multiple electrodes, increasing the electrode surface area, with the existing outer fins in order to facilitate the transfer of heat from the laser tube (Hoag, col.5 lines 35-51).

### ***Conclusion***

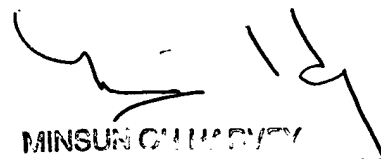
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tod T. Van Roy whose telephone number is (571)272-8447. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Harvey can be reached on (571)272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TVR

  
MINSUN CHUNG  
PRIMARY EXAMINER